

What Is Claimed Is:

1. A method of fabricating a liquid crystal display device, comprising the steps of:

forming a first metal layer on a substrate to form a gate line including a gate electrode, a gate pad, and a first capacitor electrode;

forming an insulating layer, an active layer, and a second metal layer on the substrate;

patterning the second metal layer to form a data line including a data pad, a source electrode, a drain electrode, and a second capacitor electrode;

forming a passivation layer to cover the second metal layer;

forming a photoresist on the passivation layer;

exposing the photoresist using a mask having a light shielding portion, a light transmissive portion, and a semi-transmissive portion;

forming a first photoresist portion, a second photoresist portion, and a third photoresist portion;

patterning the passivation layer, the active layer, and the insulating layer; and

forming a pixel electrode on the passivation layer.

2. The method of fabricating a liquid crystal display device according to Claim 1, wherein the gate line and the data line cross with each other to define a pixel region, and the source electrode and the drain electrode are spaced apart

from each other.

3. The method of fabricating a liquid crystal display device according to Claim 1, wherein the step of depositing and patterning a first metal layer includes a first masking step.

4. The method of fabricating a liquid crystal display device according to Claim 1, wherein the step of depositing an insulating layer, an active layer, and a second metal layer includes a second masking step.

5. The method of fabricating a liquid crystal display device according to Claim 4, wherein the step of patterning the second metal layer is included in the second masking step.

6. The method of fabricating a liquid crystal display device according to Claim 1, wherein the steps of forming a passivation layer, forming a photoresist, exposing the photoresist, forming first, second and third photoresist portions, and patterning the passivation layer are included in a third masking step.

7. The method of fabricating a liquid crystal display device according to Claim 6, wherein, in the third masking step, a side portion and upper surfaces of the drain electrode are uncovered, a capacitor contact hole is formed over the

second capacitor electrode, and a data pad contact hole is formed over the data pad through the passivation layer, and a gate pad contact hole is formed over the gate pad passing through the insulating layer, the active layer, and the passivation layer.

8. The method of fabricating a liquid crystal display device according to Claim 1, wherein the third photoresist portion has a thickness of 800 to 900 Å.

9. The method of fabricating a liquid crystal display device according to Claim 1, wherein the first metal layer includes at least a first aluminum neodymium (AlNd) material layer and a second molybdenum (Mo) material layer.

10. The method of fabricating a liquid crystal display device according to Claim 1, wherein the insulating layer and the passivation layer include at least an inorganic insulating material.

11. The method of fabricating a liquid crystal display device according to Claim 10, wherein the inorganic insulating material includes at least one material selected from a group consisting of silicon oxide (SiO_2) and silicon nitride (SiN_x).

12. The method of fabricating a liquid crystal display device according to Claim 1, wherein the insulating layer and the passivation layer include at least organic insulating materials.

13. The method of fabricating a liquid crystal display device according to Claim 12, wherein the organic insulating materials include at least one material selected from a group consisting benzocyclobutene (BCB) and an acryl-based resin.

14. The method of fabricating a liquid crystal display device according to Claim 1, wherein a portion of the passivation layer disposed over the data line has a width smaller than a corresponding width of the data line.

15. The method of fabricating a liquid crystal display device according to Claim 1, wherein the light shielding portion of the mask includes at least an opaque metal material having a low reflectivity.

16. The method of fabricating a liquid crystal display device according to Claim 15, wherein the opaque metal includes at least a chromium (Cr) material.

17. The method of fabricating a liquid crystal display device according to Claim 1, wherein the semi-transmissive portion of the mask includes at least a

molybdenum silicide (MoSi) material.

18. A liquid crystal display device, comprising:

a substrate;

a first metal layer disposed on the substrate, the first metal layer includes a gate line connected to a gate electrode, and a first capacitor electrode;

an insulating layer covering the first metal layer;

a silicon layer disposed on the insulating layer, a portion of the silicon layer includes an active layer disposed over the gate electrode;

a second metal layer disposed on the silicon layer, the second metal layer includes a data line, a source electrode, a drain electrode, and a second capacitor electrode;

a passivation layer covering the second metal layer, a side edge portion of the drain electrode being exposed from the passivation layer; and

a pixel electrode disposed on the passivation layer, the pixel electrode contacting the side edge portion of the drain electrode.

19. The liquid crystal display device according to claim 18, wherein the source electrode electrically connects with the data line, the drain electrode is spaced apart from the source electrode, the source and drain electrodes are disposed on the active layer, and the second capacitor electrode is disposed over the first capacitor electrode

20. A halftone mask, comprising:

a light shielding portion shielding a photoresist from incident rays of light;

a semi-transmissive portion transmitting at least a portion of the incident rays of light to the photoresist; and

a light transmissive portion transmitting at least all the incident rays of light to the photoresist.

21. The halftone mask according to Claim 20, wherein the light shielding portion includes at least an opaque metal material having a low reflectivity.

22. The halftone mask according to Claim 20, wherein the opaque metal includes at least a chromium (Cr) material.

23. The halftone mask according to Claim 20, wherein the semi-transmissive portion includes at least a molybdenum silicide (MoSi) material.

24. The halftone mask according to Claim 23, wherein the molybdenum silicide (MoSi) material has a transmissivity of 30 to 40 %.

25. The halftone mask according to Claim 20, wherein the light shielding portion includes at least a molybdenum silicide (MoSi) material layer and a

chromium (Cr) material layer sequentially disposed on a transparent substrate.

26. A liquid crystal display device, comprising:

a substrate;

a first metal layer disposed on the substrate, the first metal layer includes at least a gate line that is connected to a gate electrode, and a first capacitor electrode, one end of the gate line is electrically connected to a gate pad;

an insulating layer covering the first metal layer;

a gate pad contact hole formed passing through the insulating layer to uncover a portion of the gate pad;

a silicon layer disposed on the insulating layer, a portion of the silicon layer includes an active layer disposed over the gate electrode;

a second metal layer disposed on the silicon layer, the second metal layer includes at least a data line, a source electrode, a drain electrode, a second capacitor electrode, and a data pad;

a passivation layer covering the second metal layer, a side edge portion of the drain electrode being exposed from the passivation layer; and

a pixel electrode disposed on the passivation layer, the pixel electrode contacting the side edge portion of the drain electrode.

27. The liquid crystal display device according to Claim 26, wherein the source electrode electrically connects with the data line, the drain electrode is spaced

apart from the source electrode, the source electrode and the drain electrode are disposed on the active layer, the second capacitor electrode is disposed over the first capacitor electrode, and the data pad is connected to first end of the data line.

28. The liquid crystal display device according to Claim 26, wherein a capacitor contact hole and a data pad contact hole are formed passing through the passivation layer uncovering corresponding portions of the second capacitor electrode and data pad.

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